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(56) Documents cited
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(54) Personnel evacuation system

(57) A system for directing persons to the nearest safe exit 16 from a building or personnel carrier during evacuation in an emergency comprises rows of lamps 4 extending between the exits and means such as a central processing unit 14 for sequentially energizing the lamps in a direction leading to a safe exit upon the sensing of an emergency condition. The system may include lights of different intensities selectively illiuminatable according to the prevailing visibility, plug-in power and data take-off points 7, fire detectors 9, call points 10, audio alarms 11 and security key points 15.

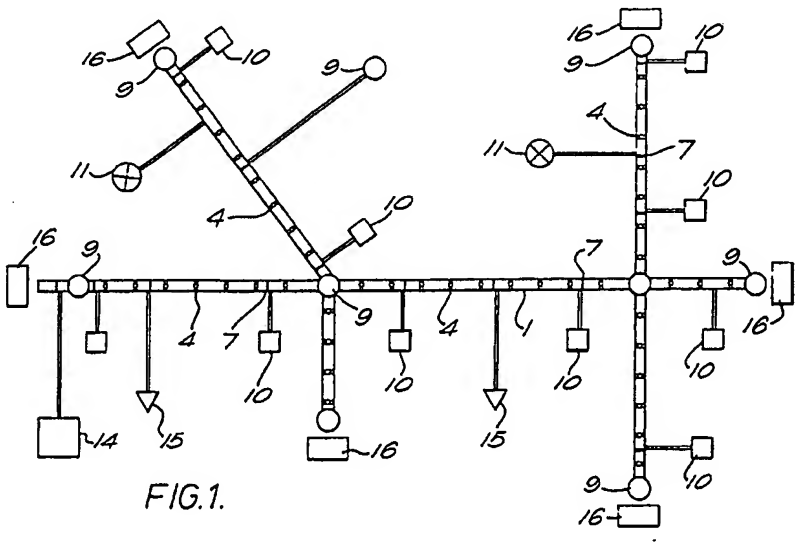

FIG.1.

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1982.

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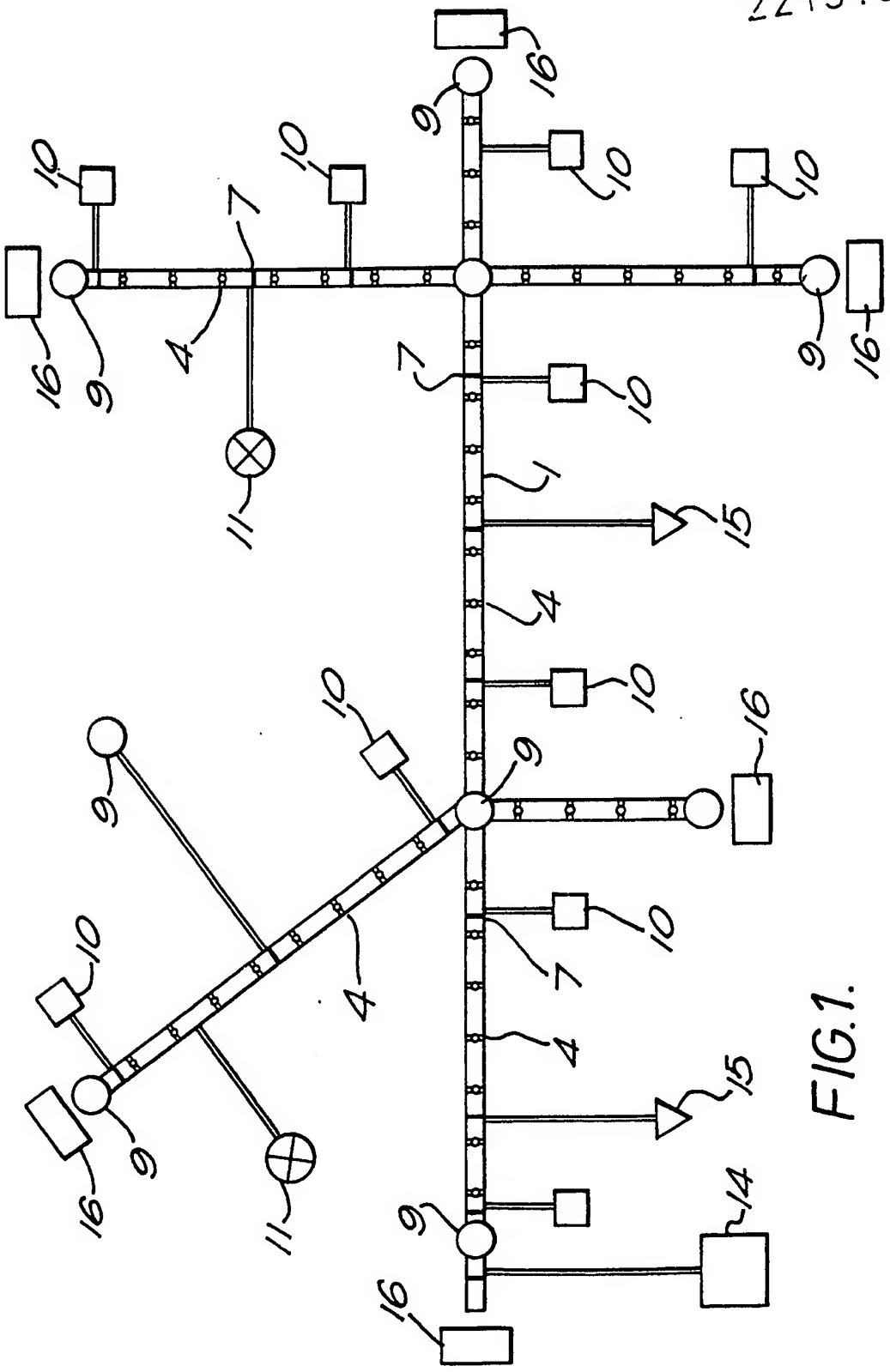

FIG.1.

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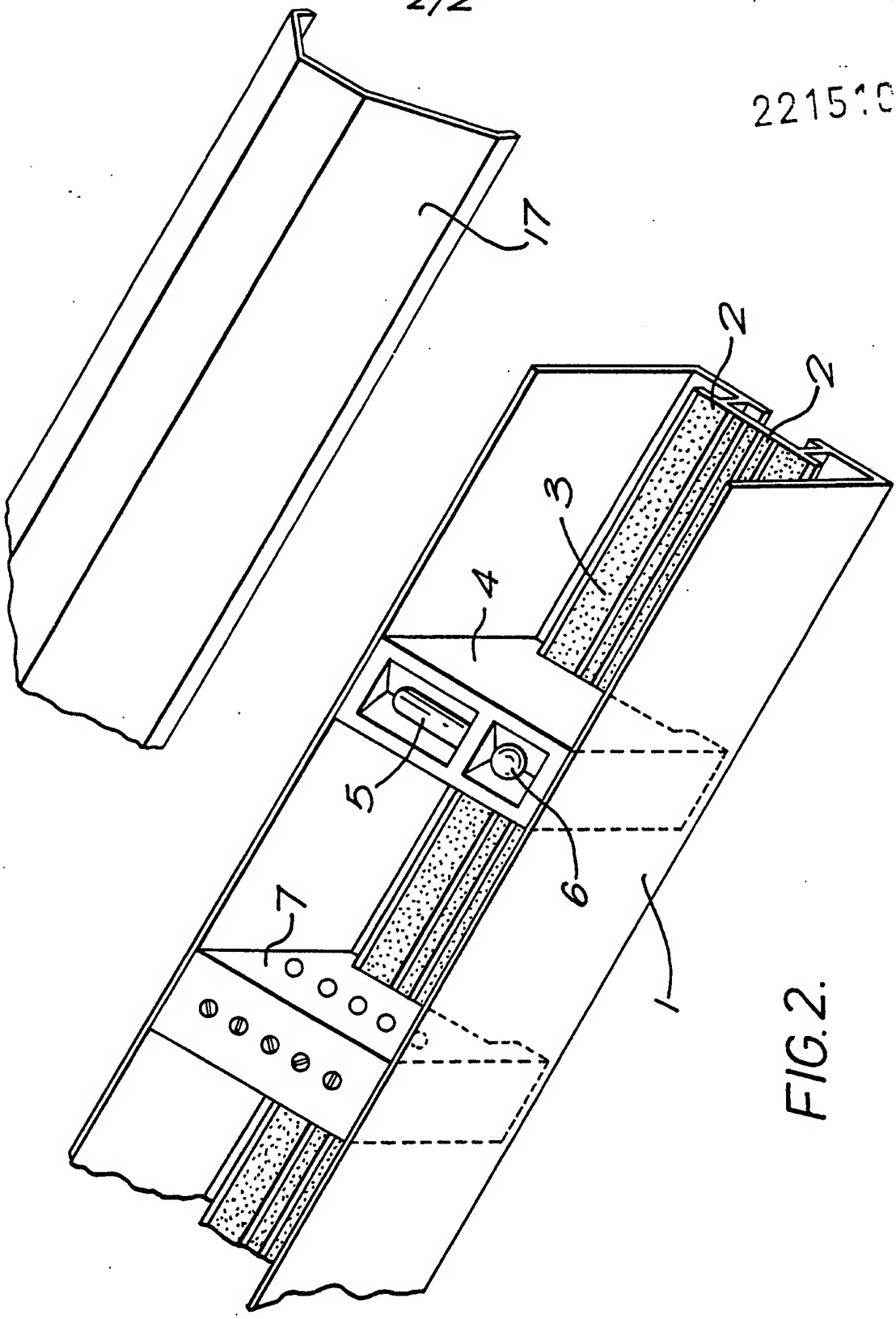

FIG.2.

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PERSONNEL EVACUATION SYSTEM

This invention relates to a system and apparatus for use in directing persons to the nearest safe exit from a building or a personnel carrier, such as an aircraft or boat, during evacuation thereof in an emergency, such as in the case of fire.

Modern fire alarm systems employ smoke and/or heat sensors to automatically activate audio alarms when fire conditions are detected by such sensors. Normal exits and fire exits are marked, usually by means of illuminated signs, and personnel escape by finding the nearest exit. However, the nearest exit may not be obvious to a person, or it may be obscured by dense smoke, or it may be hazardous due to a fire condition along the exit path. The layout of a building or a ship may also be unfamiliar to a person and such a person may not have knowledge of set evacuation procedures.

According to the present invention in one aspect there is provided a system for use in directing persons to the nearest safe exit from a building or a personnel carrier during evacuation in an emergency, comprising a row or rows of lamps extending between exits, and means for sequentially energizing said lamps in a direction leading to a safe exit upon the sensing of an emergency condition in said building or carrier.

Preferably, the lamps are controlled by an interactive central processing unit that scans elements for sensing an emergency condition and that controls the energizing and direction of sequence of energisation of the lamps.

The processing unit also preferably controls the light intensity of the energized lamps.

An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings in which:-

Figure 1 shows diagrammatically the layout of apparatus embodying the invention, and

Figure 2 is a perspective view of trunking with a cover thereof shown removed.

The apparatus comprises extruded trunking 1 which extends between exit locations 16. The trunking 1 contains a plurality of separate insulated electrical conductors 2 which may have their upper surface 3 exposed for electrical contact. Plug-in light modules 4 are located at intervals along the lengths of trunking 1, preferably at regular intervals. The light modules 4 each contain a high intensity lamp 5, such as a Xenon discharge tube, and a medium intensity lamp 6, such as a tungsten filament bulb. The high intensity lamps 5 are used in situations of dense smoke and poor visibility.

At predetermined locations are provided fire detectors 9 which are electrically connected to the conductors 2 in the trunking 1. Additional components such as call points 10, audio alarms 11, electro-magnetically operated fire door releases and means for activating sprinkler valves may also be connected to the conductors 2 in the trunking 1 using a plug-in power and data take-off unit 7. The trunking 1 is covered by a cover 17 which is at least partly translucent.

The entire system is controlled by a central processing unit 14 which continuously scans the detectors 9 and activates the audio alarms 11, fire door releases etc. when a detector 9 goes to an alert condition. The processing unit 14 is pre-programmed with the locality of all exit locations 16 and determines the safe exit routes away from the area where the fire condition sensed by the detectors 9 which are at the alert condition exists. The lamps 5 or 6 are then energized in sequence in a desired direction such that a moving light effect travelling towards a safe exit 16 is generated. In areas where the detectors 9 detect poor visibility due to dense smoke for example, the processing unit 14 will cause the high intensity lamps 5 to be energized either in addition to the lamps 6 or instead of the lamps 6. The safe exit routes and evacuation area are continuously monitored by the processing unit 14 and if an exit route becomes unsafe the direction of the sequenced lighting is changed to indicate the direction to another safe exit. Preferably the trunking 1 is located at floor level, but it can be located at ceiling or eye level or at any other desired level.

In buildings where immediate automatic evacuation may be dangerous or create a panic situation, for example in hospitals or schools, the system may be pre-programmed to go initially to a pre-alert state. The pre-alert state may be indicated at the central processing unit 14 or by energizing any of the lamps. A coded, static or sequenced pattern of lights may also be

used to indicate the nature of the emergency, for example terrorist activity at an airport. This permits authorised personnel to investigate the emergency and decide on the appropriate action. Besides having full control and monitoring of the system at the central processing unit 14 the investigating person may also authorise evacuation by using a security key point 15 located at regular intervals along the trunking 1.

Floor or zone processing units may be linked to a master processing unit that is programmed to control the safety status of complex building structures.

The system has been described in connection with buildings but it can also be used on a boat, particularly a passenger carrying liner, or an aircraft.

The system thus senses an emergency condition, such as a fire, and gives a visual indication to personnel of the route that they should take in order to find a safe exit, and if an exit or exit route becomes unsafe the system will then change the visual indication to indicate another safe exit route.

The system will be designed such that if part of the system is destroyed the remaining sections will remain fully operative.

Instead of having two lamps 5 and 6, it is possible to have a single lamp whose light intensity can be varied.

CLAIMS

1. A system for use in directing persons to the nearest safe exit from a building or a personnel carrier during evacuation in an emergency, comprising a row or rows of lamps extending between exits, and means for sequentially energizing the lamps in a direction leading to a safe exit upon the sensing of an emergency condition in the building or carrier.

2. A system according to claim 1, in which the lamps are controlled by an interactive central processing unit that scans elements for sensing an emergency condition and that controls the energizing and direction of sequence of energisation of the lamps.

3. A system according to claim 2, in which the processing unit also controls the light intensity of the energized lamps.

4. A system for use in directing persons to the nearest safe exit from a building or a personnel carrier during evacuation in an emergency substantially as hereinbefore described and illustrated with reference to the accompanying drawings.

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